

Claims

1. A high-pressure pump, in particular for a fuel injection system of an internal combustion engine, having at least one pump element (16), which has a pump piston (20) driven in a reciprocating motion and defining a pump work chamber (24), into which in the intake stroke of the pump piston (20) fuel is aspirated from a fuel inlet (50) via an inlet valve (30) and from which in the pumping stroke of the pump piston (20) fuel is positively displaced via an outlet valve (32) into a high-pressure region (56, 12), and the inlet valve (30) and/or the outlet valve (32) has a valve member (44; 60), which with a sealing face (48; 64) cooperates with a valve seat (42c; 54b) disposed in a valve housing (40; 36), and by means of the valve member (44; 60) in the opened state, when the valve member with its sealing face (48; 64) has lifted from the valve seat (42c; 54b) opens a flow cross section between the valve member (44; 60) and the valve housing (40; 36), characterized in that in the opened state of the valve member (44; 60), a region (52; 66) having the smallest flow cross section between the valve member (44; 60) and the valve housing (40; 36) is located downstream, in the flow direction of the fuel flowing through the valve (30; 32), of the sealing face (48; 64) of the valve member (44; 60).

2. The high-pressure pump as recited in claim 1, characterized in that the valve housing (40; 36) has a first jacket face (42c; 54b), inclined relative to its longitudinal axis (45; 55) of the high-pressure pump and surrounding the valve member (44; 60), which jacket face forms the valve seat, and a second jacket face (42d; 54c), adjoining the first jacket face (42c; 54b) and inclined relative to its longitudinal axis (45; 55) and

surrounding the valve member (44; 60); that the angle of inclination (β) of the second jacket face (42d; 54c) relative to the longitudinal axis (45; 55) is less than the angle of inclination (α) of the first jacket face (42c; 54b); and that in the opened state of the valve member (44; 60), the region (52; 66) of the smallest flow cross section is located between the valve member (44; 60) and the second jacket face (42d; 54c) of the valve housing (40; 36).

3. The high-pressure pump as recited in claim 2, characterized in that the first jacket face (42c; 54b) and/or the second jacket face (42d; 54c) of the valve housing (40; 36) is embodied at least approximately frustoconically.

4. The high-pressure pump as recited in one of claims 1 through 3, characterized in that the sealing face (48) of the valve member (44) is embodied at least approximately frustoconically and is inclined to the longitudinal axis (45) of the first jacket face (42c) preferably by a different angle (γ) from the angle (α) by which the first jacket face (42c) of the valve housing (40) is inclined relative to its longitudinal axis (45).

5. The high-pressure pump as recited in one of claims 2 through 4, characterized in that at the transition between the first jacket face (42c) and the second jacket face (42d) of the valve housing (40), an undercut (42e) is provided, which preferably has a jacket face extending at least approximately parallel to the longitudinal axis (45).

6. The high-pressure pump as recited in claim 4 or 5, characterized in that the sealing face (48) is located on the valve member (44) at the transition between a shaft (44a) of

the valve member (44) and a head (46) of the valve member (44) of enlarged cross section compared to the shaft (44a); and that on the head (46) of the valve member (44), a region (47) with a cross section that is reduced compared to the rest of the cross section of the head (46) is provided, which faces the transition between the first jacket face (42c) and the second jacket face (42d) in the valve housing (40).

7. The high-pressure pump as recited in one of claims 1-3 or 5, characterized in that the valve member (60) is embodied at least approximately spherically; and that the sealing face (64) is formed by a region of the surface of the valve member (60).

8. The high-pressure pump as recited in one of the foregoing claims, characterized in that in the opened state of the valve member (44; 60) in the region of its sealing face (48; 64), a higher static pressure prevails than in the region (52; 66) of the smallest flow cross section; and that as a result of the pressure acting on the sealing face (48; 64), a force in the opening direction on the valve member (44; 60) is generated.